
Space Weather Forecast

Issued on Sunday, 02 April 2023 at 12:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Minor Geomagnetic Storms throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with only one Common-class flare observed. There are currently relatively few sunspot regions on the disc, all of which appear to be small and simple. Several Coronal Mass Ejections (CMEs) have been detected in available imagery, however analysis would suggest that none are Earth-directed.

Solar Wind / Geomagnetic Activity: The solar wind has been predominantly at Elevated levels with wind speeds of 550-580 km/s, enhanced by the waning influence of a fast stream from a coronal hole. The important north-south component has been weakly fluctuating. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3), with one Active interval (Kp 4) 01/1500-01/1800 UTC.

Energetic Particles / Solar Radiation: High energy proton enhancement (greater than 10MeV) has been at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low, though confidence reduces later in the period.

Solar Wind / Geomagnetic Activity: No Earth-directed Coronal Mass Ejections are expected. Although, there is a slight chance of glancing blows arriving at Earth on Days 1-2 (02-03 Apr). Solar wind speeds currently at Elevated levels, and are likely to persist at generally Slightly Elevated or Elevated through Days 1 and 2 (02-03 Apr). Wind speeds may be enhanced if Earth experiences any effects from transitory Coronal Mass Ejections. Enhancement to solar winds is expected during Days 3-4 (04-05 Apr) as Earth will likely see the onset of effects of fast winds from coronal holes. Solar wind speeds expected to rise to Elevated or perhaps Strong levels.

Generally Quiet to Unsettled geomagnetic activity is expected, with Active intervals likely and a chance of G1/Minor Storm intervals due to continued fast winds and possible transitory CME effects. Into Day 2 and Day 3, Unsettled to Active geomagnetic activity is expected, with a chance of G1/Minor storming due to the likely arrival of coronal hole 90 and the continuing risk of CME glancing blows.

Energetic Particles / Solar Radiation: No solar radiation storms are expected through the period.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	30	50	50	30
Strong	G3	No	1	5	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	5	5	5	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)